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Small Farms Research News

USDA, ARS, SPA

Fall 2001 2nd Edition

Grass, Cows, and Sheep

Bermudagrass Variety Trial

Bermudagrass is a major summer based grass used for pasture and hay in this area. In April of 2000, a multi-year field trial was initiated at the DBSFRC, Booneville, AR to determine the performance of 12 bermudagrasses. Plots were established in a randomized block design with each bermudagrass replicated three times. The objectives are as follows: 1) compare the development during the year of planting; 2) determine dry matter and crude protein; 3) evaluate persistency; and 4) identify cultivars as potential alternatives or replacements for existing bermuda's.

Yields for the year 2000 expressed as dry forage appear in Table 1. Results are only from those entries that were advanced enough to cut in August and September 2000. Tifton 85, CD 90160, and LCB 84x19 had not developed sufficiently in 2000 to harvest forage. Jiggs, Tifton 44 and Midland 99 ranked one, two and three in yield. However, 90% of Jiggs was lost to the winter cold of 2000/2001 and therefore is not a viable candidate for future production.

Table 2 reflects the 2001 forage yields. Midland 99 and Tifton 44 were one and two, respectively. Midland 99 produced almost 9000 pounds/acre whereas Tifton produced just under 8000 pounds/acre. At this writing and considering many agronomic factors, it appears that Midland 99 and Tifton 44 are the two most desirable entries in this test.

Table 3 indicates the percent of bermuda emerged and height in inches by date a few weeks

after planting. For example, 10% of the Oklahoma Wonder Plot emerged by April 5th at an average of two inches in height. There are three additional dates, April 9th, April 12th, and April 16th from which similar information can be derived.

There are several points I'd like to make.

1. Soil fertility is maintained at the University of Arkansas recommended medium fertility level per soil tests.
2. All bermuda entries received 60 pounds of nitrogen the day after harvest.
3. The summer of 2001 was another dry summer and moisture was a limiting factor. For example, 2.10 inches of rain fell between the June and July cutting dates. Only 1.40 inches was received between the July 18th and August 22nd cutting dates. As you can see, moisture was scarce.
4. Notice the parallelism between early emergence and the higher early yields. Oklahoma Wonder, Quickstand, and Midland emerged earliest and those three varieties had the highest yields on the May 16th cutting. This trend doesn't carry through the season, however, as Midland 99 and Tifton 44 became dominant by season's end.
5. Whitney and Jiggs varieties can't adequately tolerate our winters. More than 80% of each was winter killed during the winter of 2000/2001.
6. Tifton 85 also was winter damaged and approximately 60% of its stand was lost. Therefore, there is no yield data for the May, June, and July cuttings.

Table 1. Dry Forage Yields from Bermudagrass - 2000
Booneville, Arkansas

Pounds/Acre			
Clipping Dates			
Variety or Strain	08/08	09/07	2000 Total
Jiggs	2902	913	3815
Tifton 44	2610	1150	3760
Midland 99	2393	1260	3653
Russell	2896	657	3553
Whitney	2063	879	2942
Common	2293	475	2767
Midland	1552	456	2044
OK Wonder	818	456	1274
Quickstand	809	347	1155
Tifton 85			
CD 90160			
LCB 84x19			

Table 2. Dry Forage Yields from Bermudagrass - 2001
Booneville, Arkansas

Pounds/Acre					
Clipping Dates					
Variety or Strain	05/16	6/13	7/18	8/22	2001 Total
Quick-stand	2136	431	2902	694	6163
Midland	2026	558	2610	1296	6490
Common	1095	921	2793	1479	6288
Russell	310	788	3286	2245	6629
Midland 99	1643	1178	3340	2829	8991
Tifton 44	1406	913	3176	2227	7721
Whitney	0		182	949	1132
Jiggs	0		2245	1971	4217
Oklahoma Wonder	2209	730	1679	748	5367
CD 90160			2373	1625	3998
Tifton 85				2629	2628

Table 3. Bermuda Emergence - 2001
Booneville, Arkansas

Variety or Strain	April 5		April 9		April 12		April 16	
	%*	Ht**	%	Ht	%	Ht	%	Ht
OK Wonder	10	2	70	3	80	3	85	4
Quick-stand	8	2	69	2	75	3	82	3.5
Midland	6	1	50	2	60	2	67	3.5
Whitney	0		0		0		0	
Jiggs	0		0		0		0	
Common	2	1	4	1.25	21	2	30	2
84-19	0		1	1	2	2	5	2
6-12	2	1	3	2	15	2	20	2
16-66	2	1	2	1	12	3	18	3.25
2-8	0		1	1	3	1	4	1.5
Tifton 85	0		2	1	3	2	4	2
Tifton 44	2	1.5	5	2	12	2	20	2.5
Russell	0		1	1	2	1	3	1.5
Midland 99	2.5	1.5	6	2	12	3	22	3

* % = Percent Emergence

** Ht = Height in inches

We will continue to evaluate bermuda varieties, fertilizing and managing to simulate a hay and grazing program. Data collected during this investigation should be interesting, revealing and perhaps point to a hybrid or hybrids that should be considered by area producers.

This trial is located just across the road from the Center's main headquarters. If you are in the area and are considering establishment/renovation of a bermudagrass field, you may want to take a look for yourself.

For more information or to see the trial, contact Jim Miesner, Supervisory Agronomist *

Preconditioning Fescue Calves Prior to Transporting to the Feedyard Can Reduce Stress and Economic Loss

Heat stress is a major problem in transporting stocker calves that exhibit symptoms of fescue toxicosis. Removing calves from tall fescue pastures and placing them on diets devoid of endophyte-infested tall fescue can reduce the severity of toxicosis and precondition calves for transporting to the feedyard. A study was conducted at DBSFRC with yearling steers that had been grazing endophyte-infested tall fescue to induce fescue toxicosis. Half of the steers were implanted with an anabolic agent and the other half were not implanted. The steers were placed in pens in early summer and provided with either free-choice feeding of a moderately low-quality bermudagrass hay or concentrate feed plus bermudagrass hay. Nearly all of the steers exhibited classic symptoms of fescue toxicosis (retained winter hair coats, high rectal temperature, and low serum prolactin concentration) when they were removed from the tall fescue pastures. Within 3 to 4 days of being removed from tall fescue pastures, the steers had normal rectal temperatures and increased serum prolactin concentrations. Implanting or diet did not appear to influence the time needed to improve steer health status. Although it is extremely doubtful that fescue toxicosis is completely alleviated in 3 to 4 days, results of the experiment indicated that implanted and non-implanted calves exhibiting symptoms of fescue toxicosis can be removed and placed on a diet devoid of endophyte-infected tall fescue to reduce mortality rates and economic losses when transporting these calves to the feedlot.

For further information contact either Glen Aiken, Research Agronomist or Sam Tabler, Agricultural Science Research Technician. *

Sheep Field Day

The Center held a field day, Sheep Day 2001, on August 25. The day was a success! More than 75 registered participants from Arkansas, Oklahoma, Texas, Louisiana, Missouri, and Ohio attended. The keynote speaker was Dr. Charles Parker, who has a long history of involvement in the

U.S. sheep industry. Dr. Parker spoke about strategies producers can use to keep the industry viable and their own operations profitable. Other speakers were Guy Robson (Biological Science Technician, DBSFRC) briefing us about predator control, Dr. Dianne Hellwig (University of Arkansas Faculty Member) summarizing health issues, Dr. Jim Morgan (local producer) informing producers of local marketing strategies, Dr. Ken Coffey (University of Arkansas Faculty Member) enlightening us on feeding management, Bob Wells (Missouri Extension Agent) imparting knowledge on increasing profitability of the flock, and Dr. Joan Burke (Research Animal Scientist, DBSFRC) explaining recent developments with hair sheep research. There was a youth program put on by Steve Jones (Arkansas Extension Agent) and Carey Wall (Arkansas Extension Agent).

Many of the participants volunteered to evaluate three meat samples before consuming lamb mignon for lunch. The lamb was prepared and cooked by Dr. Jason Apple of the University of Arkansas, Jerry Stephenson, meat manager at the University, and graduate students. The product is processed lamb (or mutton) and has the appearance and flavor of beef filet mignon. The three samples were Katahdin lamb, Rambouillet lamb, and St. Croix mutton. Katahdin and St. Croix are hair breeds of sheep and Rambouillet is a wool breed. The samples were evaluated for tenderness, juiciness, overall flavor, desirability, and presence of off-flavors. Surprisingly, there were no differences detected for tenderness, juiciness, and most importantly, presence of off-flavor. Many people detect an off-flavor when eating mutton. These results suggest that no off-flavor occurs when mutton is processed as lamb mignon. There was a preference, in terms of overall flavor and desirability, for the Rambouillet compared with the Katahdin lamb. Although this was not a scientific taste evaluation, it does inform us that mutton can be enjoyed and is as acceptable as lamb. There will be a trained sensory panel that will evaluate wool compared with hair breeds of lamb. This will be conducted at the University of Arkansas by Dr. Apple.

For additional information contact Joan Burke, Research Animal Scientist *

Does 60 days affect weaning weights of spring born calves?

A series of experiments conducted at DBSFRC between 1994 and 1996 were analyzed to provide insight into the question: Is there a difference in weaning weight among calves born early in the spring versus those born later in the spring? Forage in Booneville tends to be of lower quality in the late summer and early fall as compared to the forage present in the spring and early summer. Therefore, calves being born later in the spring spend more time on lower quality forage. Said another way: calves born early in the spring have greater access to higher quality forage than late born calves. This access to higher quality translates into better weaning weights when adjusted to 205 days after birth?

Brood cows in these experiments were one-half to one-quarter Brahman with the remainder being a mixture of English breeds (Angus, Hereford, Shorthorn). Cow and their calves were pastured on tall fescue from weaning in October or November to the first half of June. From the first half of June to weaning, cows and their calves were pastured on common bermudagrass. Both bermudagrass and tall fescue were fertilized and managed according to recommendations made by the University of Arkansas's Division of Agriculture. Details of these management protocols appeared in the Center's first newsletter (Fall 2000 edition) in the article on pages 2 and 3 entitled "Senepol cows raise big calves on tall fescue". Pastures were stocked with similar numbers of cows in the two groups- early spring birthing and late spring birthing. Cows were exposed to bulls for a total of 70 days about 2 months after the average calving date. Calf weaning weights were adjusted to 205 days post-partum.

The average birth date of calves differed between the two groups by 53 days, March 5 versus April 27. The average adjusted weaning weight differed significantly between the two groups of cows. Calves from cows birthing early in the spring averaged 52 pounds 582 pounds per weaned calf as compared to 530 pounds per weaned calf for calves born later in the spring. This represents approximately one pound less in weaning weight per day delay in calving date in the spring. In these studies there were no differences between the early

spring calving cows and the group calving after in the spring in either the calving percentage of cows or percentage of cows weaning a calf. These results suggest that shifting the average calving date to earlier in the spring, will increase weaning weights.

<u>Cow Group</u>	<u>Average Calf's Birth Date</u>	<u>Average Adjusted Weaning Weight</u>
Early Spring Birthing	March 5	582 pounds/calf
Late Spring Birthing	April 27	530 pounds/calf

For information contact David K. Brauer, Supervisory Research Agronomist. *

Have You Seen Us Lately?

Summer time is a very busy time for us at the Center. Not only are we busy cutting hay, maintaining pastures and fence lines, gathering data on growth of calves and stockers; but also providing tours, and information to a variety of local groups.

Many of the staff donate their time and energy to support Logan County's fairs and adjoining county fairs. Most of the support that county fairs receive from Center employees is at their expense both in terms of time and energy. As the lead person for the ARS unit at the Center, I do what I can to support employees' efforts at these fairs. Arkansas' county fairs are a great tradition that can really help keep our State's young people "connect" to agriculture. The Center will continue to do what we can to help.

In addition to the County fairs, Center employees hosted several tours for students (elementary through community college) and teachers through the summer. The Center has participated the last two (2) years in an environmental training course for continuing education of high school teachers from Northwest Arkansas. Local Boys and Girls clubs also toured the Center this past summer. A distinct memory from one such visit will stay with me for a long time. One teenaged young lady was quite distressed that the Center has a steer with a plastic insert to allow access to its stomach for studies on its digestive

activities. Such cattle are common place to me, not a "means" of torture and torment as the teenager thought.

A good public school education is more important than ever before. All too often in Western Arkansas will hear how the "school system" is not producing high quality students. I do not believe this is true. In fact I have evidenced the contrary. The Center in the near future will be interviewing three (3) people for a research scientist position requiring a Ph.D. Two of these individuals are products of local public high schools. Our local school systems can produce "high quality" students. The Center will do what it can to support local school programs.

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Dale Bumpers Small Farms Research Center is a partnership among three institutions:

ARS- conducts research related to livestock production and agroforestry; ARS staff can be reached at 501-675-3834.

PMC/NRCS- evaluation of vegetation and vegetation technology to retain soil and its productive capability; NRCS staff can be reached at 501-675-5182.

Division of Agriculture / University of Arkansas- dissemination of agricultural information. Extension Specialist, Billy Moore, can be reached at 501-675-5585.

ARS scientists at DBSFRC and their primary research focus:

David Brauer- Agronomist/Research Leader investigating both agroforestry and livestock production

Glen Aiken- Agronomist investigating production practices for stockers

Adrian Ares- Forester working on tree growth and physiology in agroforestry systems

David Burner- Agronomist investigating crop production in agroforestry systems

Joan Burke- Animal Scientist investigating reproductive performance in cattle and production practices for hair sheep

Dan Pote- Soil Scientist investigating the effects of management practices on sediment and nutrient retention in agroforestry and livestock production systems

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Organizations promoting agriculture in the Ozark Region

The information below is not an exhaustive list of organizations trying to help farmers and ranchers in the Ozarks. If your organization is interested in being included, please contact David Brauer.

Poultry Production and Product Safety Research Unit (PPPSRU)/ARS/USDA/Center of Excellence for Poultry Science is located on the campus of the University of Arkansas in Fayetteville. PPPSRU conducts research to solve problems related to: 1) diseases and physiological disorders that are of economic important to the poultry industry; and 2) land application of waste from the poultry production. PPPSRU can be reached at 501-575-4202 or on the world wide web at www.uark.edu/~usdaars/.

South Central Agricultural Research laboratory (SCARL)/ARS/USDA conducts multi-disciplinary research for developing technologies to establish and sustain production and post harvest quality of alternative crops such as vegetables, small fruits, and kenaf. The Laboratory is co-located with the Oklahoma State University's Wes Watkins Research and Extension Center in Lane, OK. SCARL can be reached by phone at 580-889-7395 or on the world wide web at www.lane-ag.org.

Shirley Community Development Corporation (SCDC) is a community-based organization formed to plan and initiate short- and long-term development programs for Shirley, AR and the surrounding communities. These programs focus on economic development, educational enhancement, youth job training, and service projects that improve and strengthen the community. SCDC is involved in projects that research and demonstrate the skills and techniques

needed for production and marketing of specialty agricultural crops. The present focus is on log-grown Shiitake mushrooms. SCDC operates the Shiitake Mushroom Center as a training center. Recent additions include on-site production of garden bricks and stepping stones, raised bed herbal plots, twin wall polycarbonate greenhouse, and compost demonstration project. SCDC can be reached by phone at (501) 723-4443 or on the web at <http://www.shiitakecenter.com/index.html>.

The Kerr Center for Sustainable Agriculture in Poteau, OK offers leadership and educational programs to those interested in making farming and ranching environmentally friendly, socially equitable, and economically viable. The Kerr Center can be reached by phone at 918-647-9123, by email at mailbox@kerrcenter.com or on the web at www.kerrcenter.com.

ATTRA, Appropriate Technology Transfer for Rural Areas, is the national sustainable agriculture information center. ATTRA provides technical assistance to farmers, Extension agents, market gardeners, agricultural researchers, and other ag professionals. ATTRA is located in Fayetteville, AR. ATTRA staff members prefer to receive requests for information at 800-346-9140. ATTRA maintains a web site at www.attra.org

The Good Grazer Group (GGG) is a network of livestock producers mainly from northwest Arkansas but includes producers from many other states including Virginia, Missouri, and Oklahoma. GGG maintains a electronic mailing list on which members routinely share information and opinions regarding various topics on forage management and livestock production. Members meet monthly, usually at a member's farm, to see and discuss information related to grazing practices. Individuals interested in joining the GGG should contact Ann Wells at annw@ncatark.uark.edu.

The Center for Advancement of American Black Walnut is a non-profit organization promoting the planting of an improved variety of eastern black walnut for nut production. For more information contact the Center's Director, Jim Jones, at P. O. Box 600, Stockton, MO 65785, 417-276-6010 (voice), 417-276-6011 (fax), or jonesctr@hotmail.com (e-mail).

Information regarding the **Arkansas Cooperative Extension Service and the Division of Agriculture** can be found on the internet at the following web site: www.uaex.edu.

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Attention

Are you interested in a person to speak at a meeting of your civic or agricultural group? If so, please contact David Brauer at 501-675-3834 to see if we can match your interests/needs to the expertise of the Center's staff.

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If you did not receive this newsletter by mail and would like to do so, please contact the Center and we will place you on our mailing list.

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Upcoming Events

A tentative date: 2nd Annual Field Day, June 1, 2002.

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